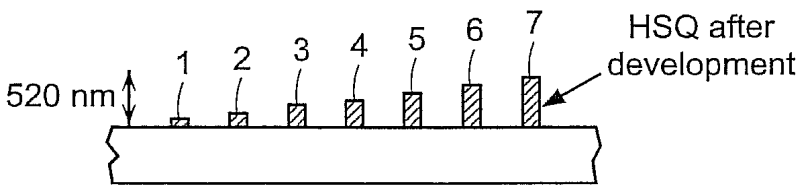

FIG. 1

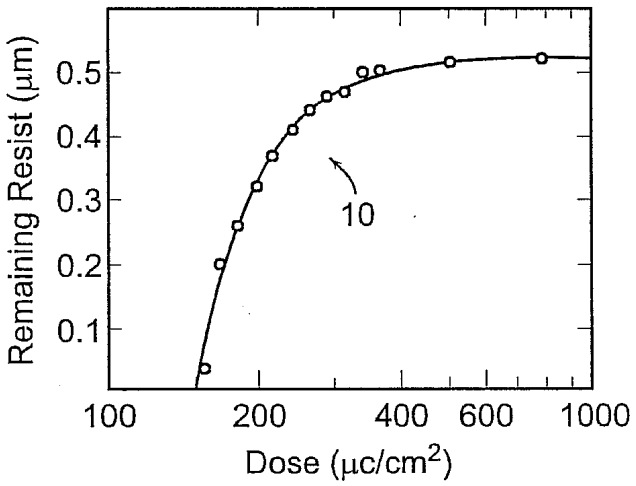

FIG. 2

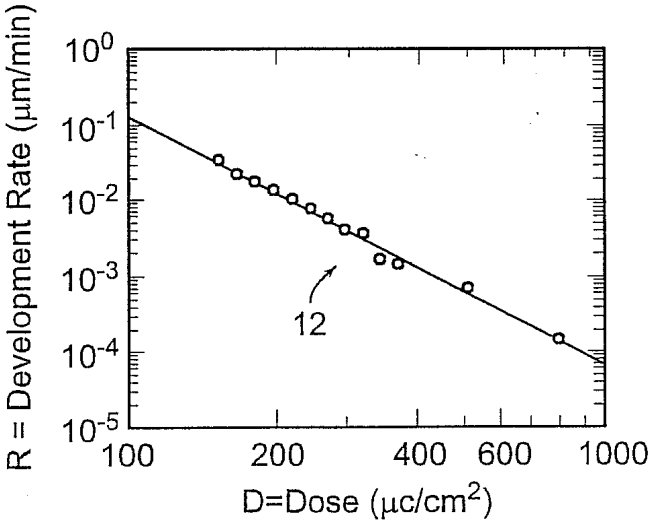

FIG. 3

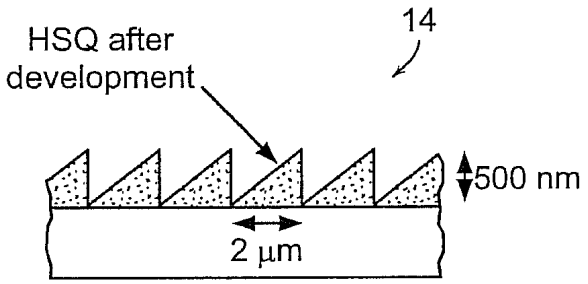
HSQ after
development
14
500 nm
2 μm

FIG. 4

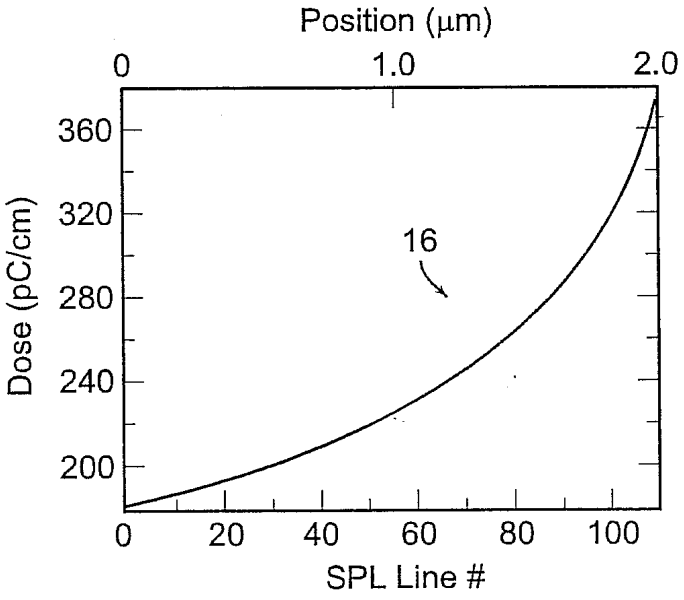
Position (μm)
0
1.0
2.0
360
320
280
240
200
Dose (pC/cm)
16
0
20
40
60
80
100
SPL Line #

FIG. 5

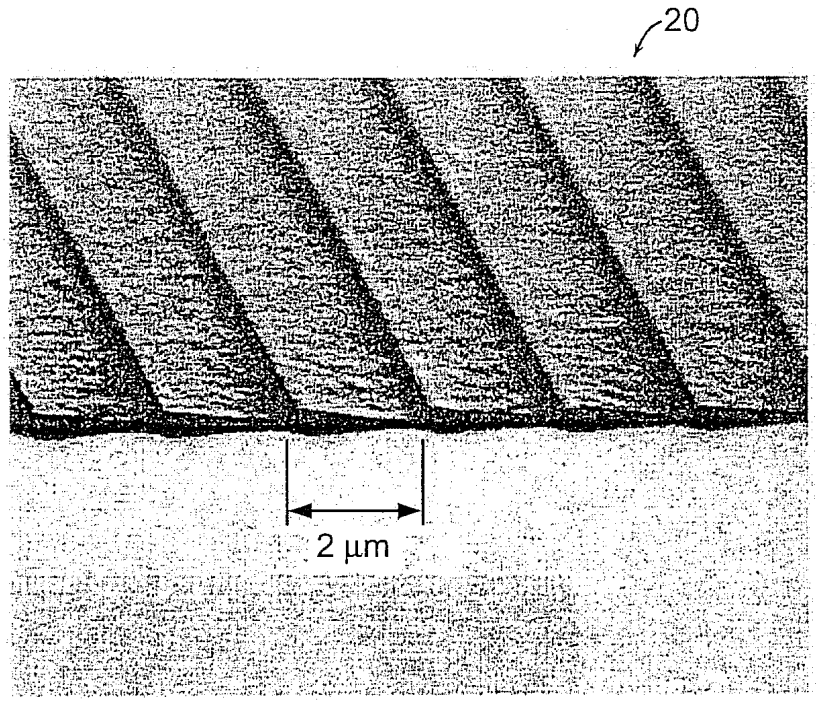

FIG. 6A

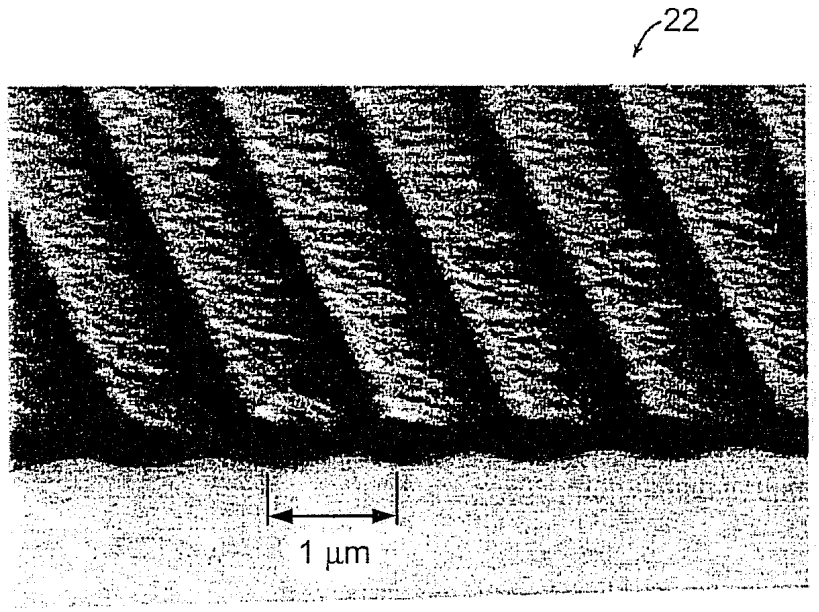

FIG. 6B

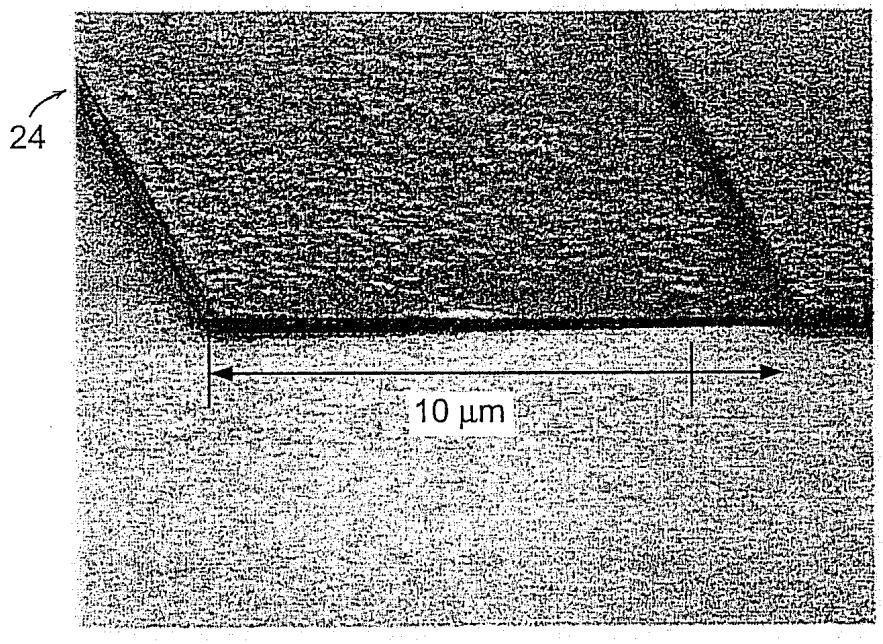

FIG. 6C

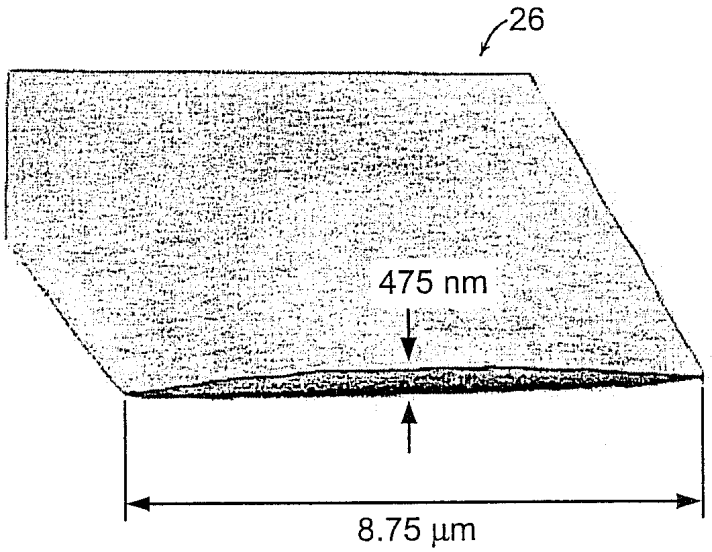

FIG. 6D

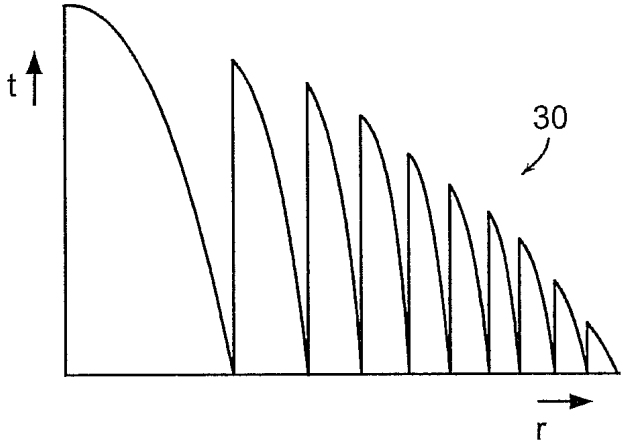

FIG. 7A

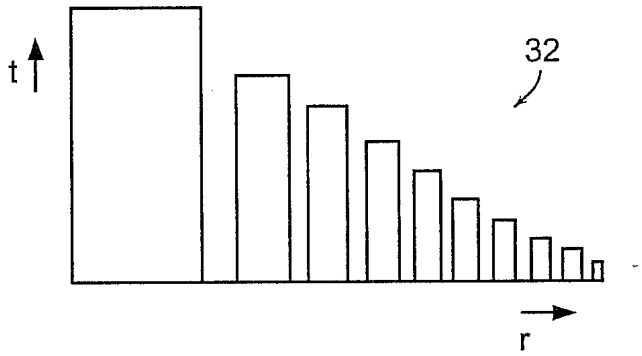

FIG. 7B

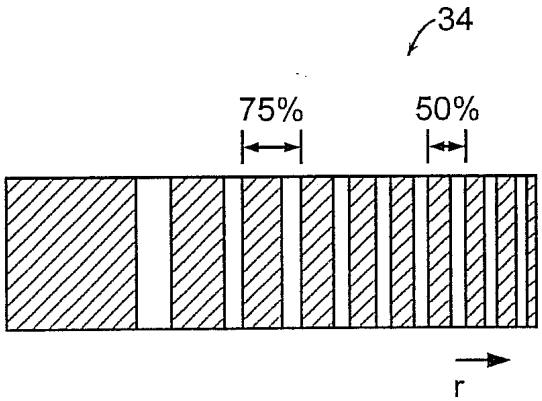

FIG. 7C

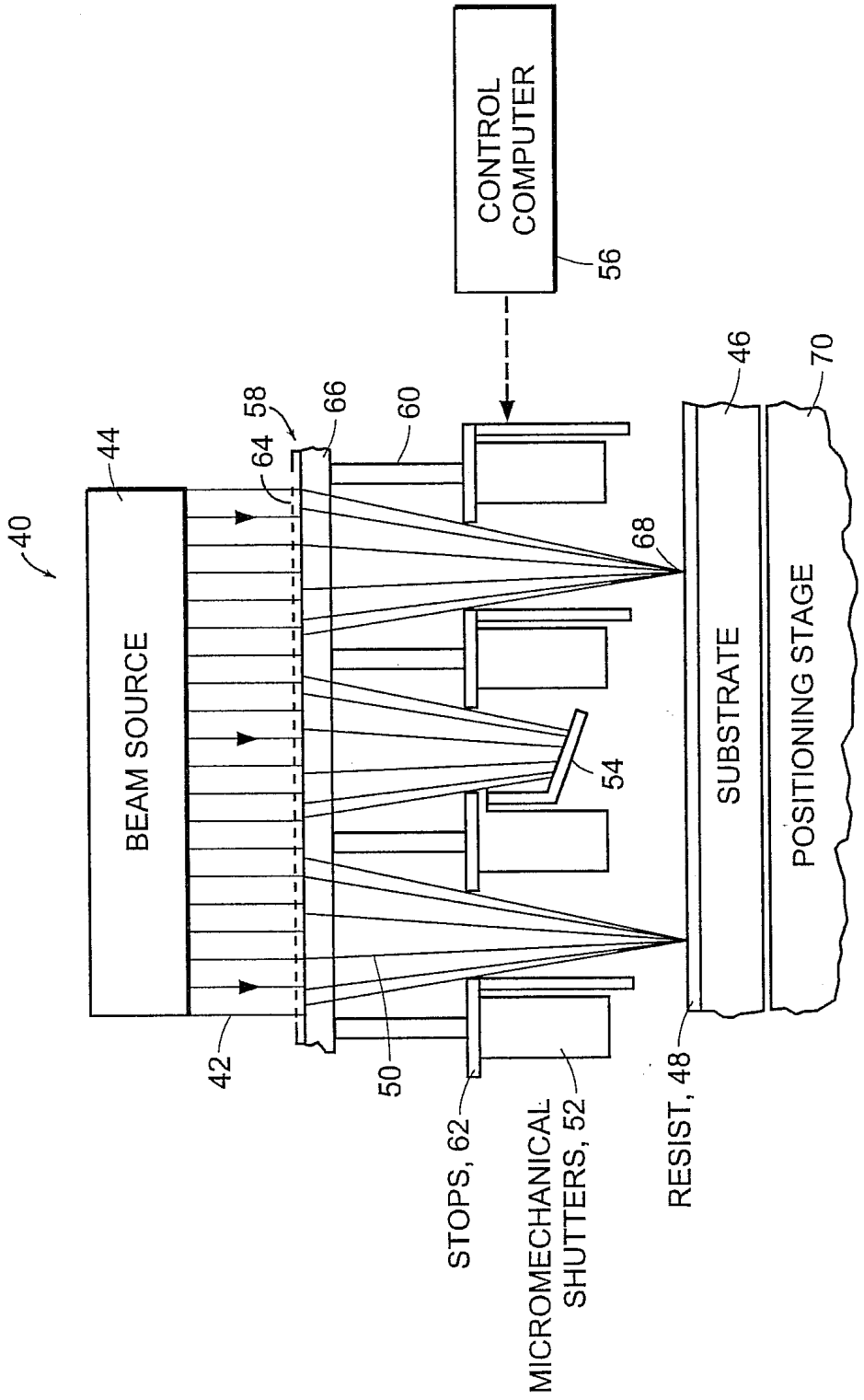
40
BEAM SOURCE
44
42
58
64
66
60
CONTROL COMPUTER
56
68
54
50
STOPS, 62
MICROMECHANICAL SHUTTERS, 52
RESIST, 48
46
SUBSTRATE
70
POSITIONING STAGE

FIG. 8

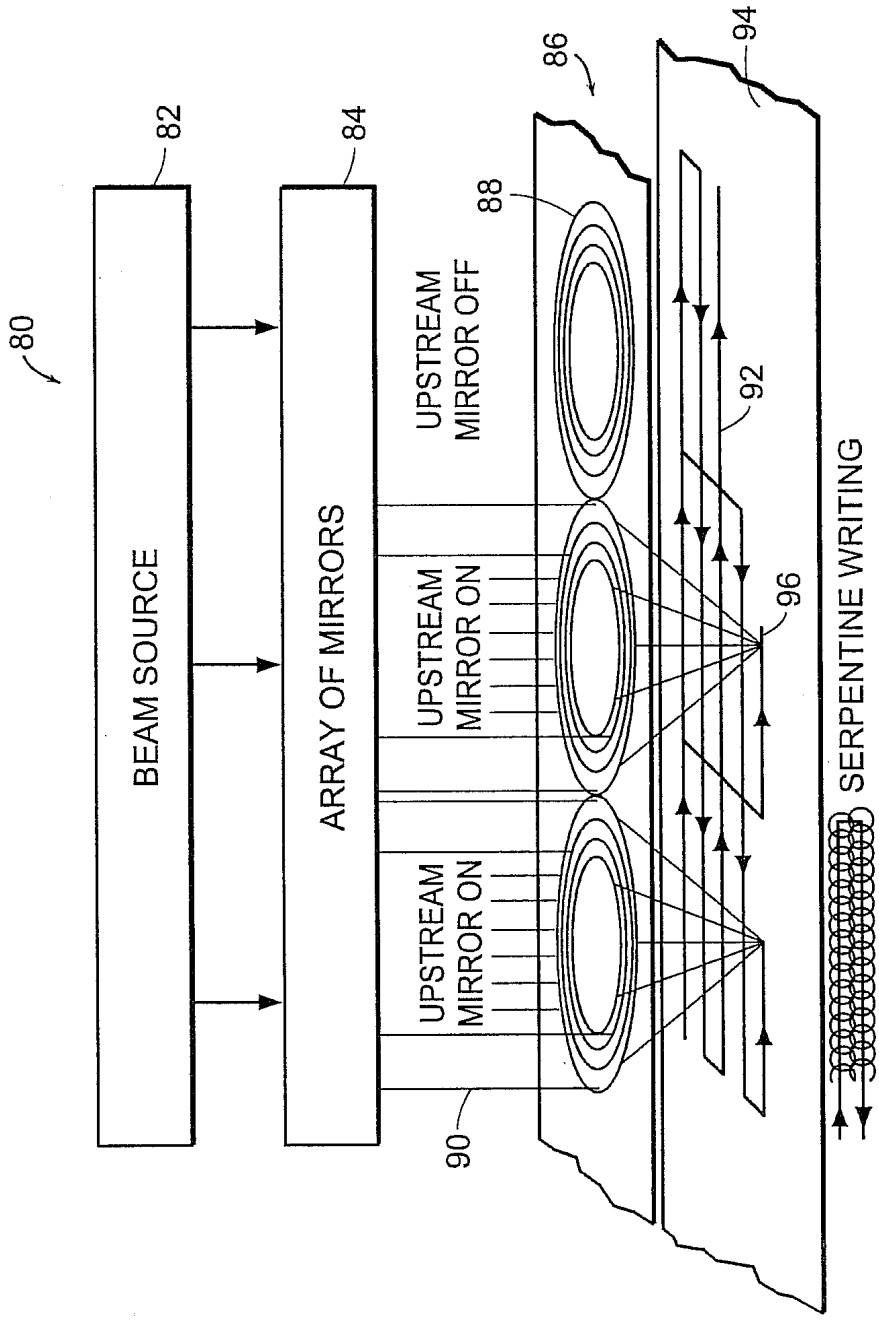
80
82
BEAM SOURCE
84
ARRAY OF MIRRORS
86
88
UPSTREAM MIRROR OFF
UPSTREAM MIRROR ON
UPSTREAM MIRROR ON
90
92
94
96
SERPENTINE WRITING

FIG. 9

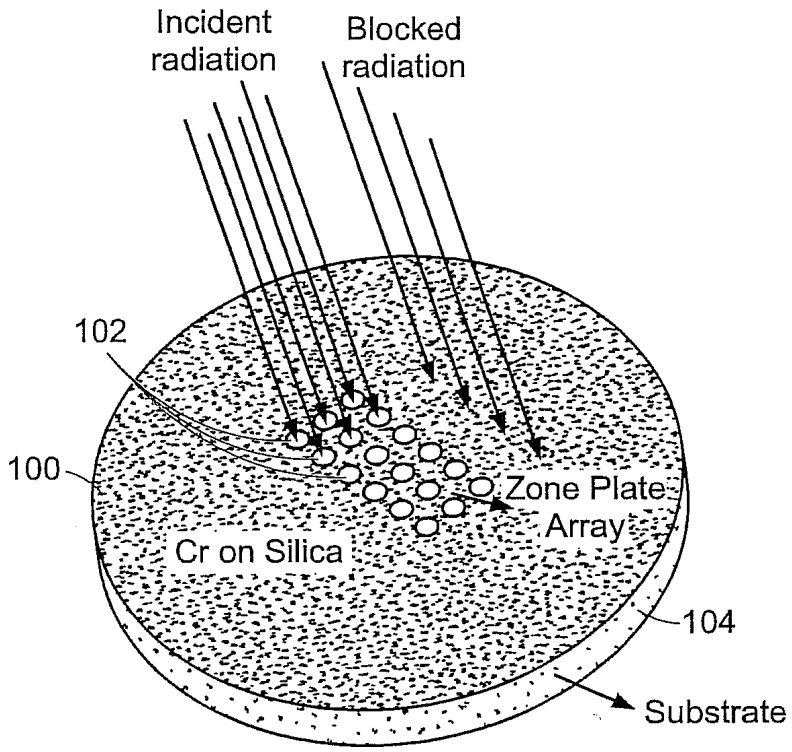
Incident radiation
Blocked radiation
102
100
Zone Plate Array
Cr on Silica
104
Substrate

FIG. 10

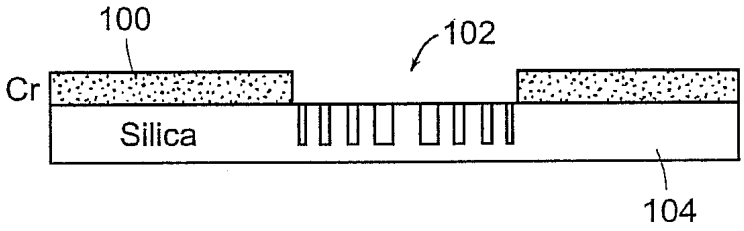
100
102
Cr
Silica
104

FIG. 11

FIG. 12A

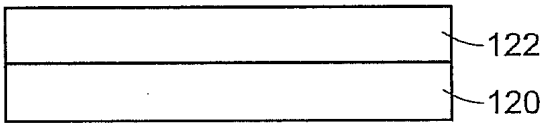

FIG. 12B

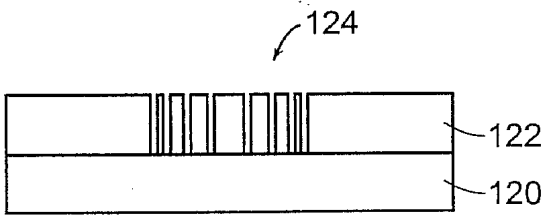

FIG. 12C

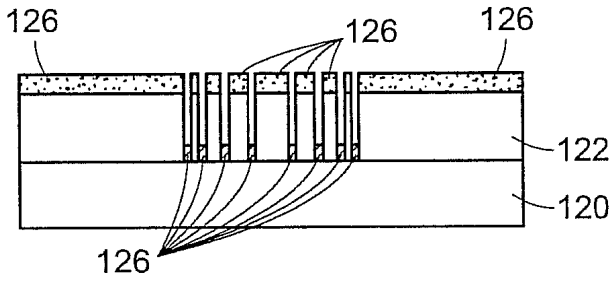

FIG. 12D

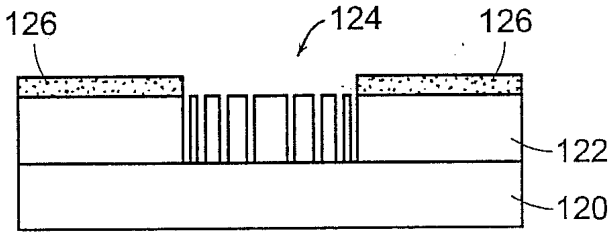

FIG. 12E

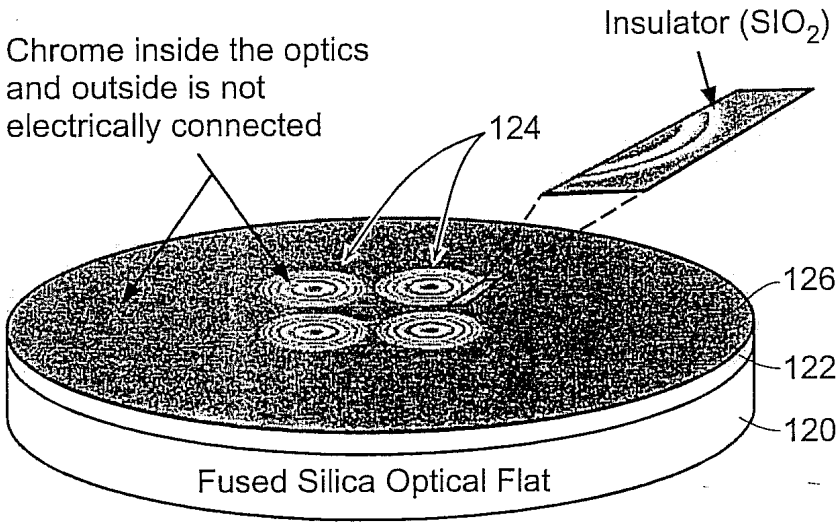
Insulator (SIO_2)
Chrome inside the optics and outside is not electrically connected
124
126
122
120
Fused Silica Optical Flat

FIG. 13

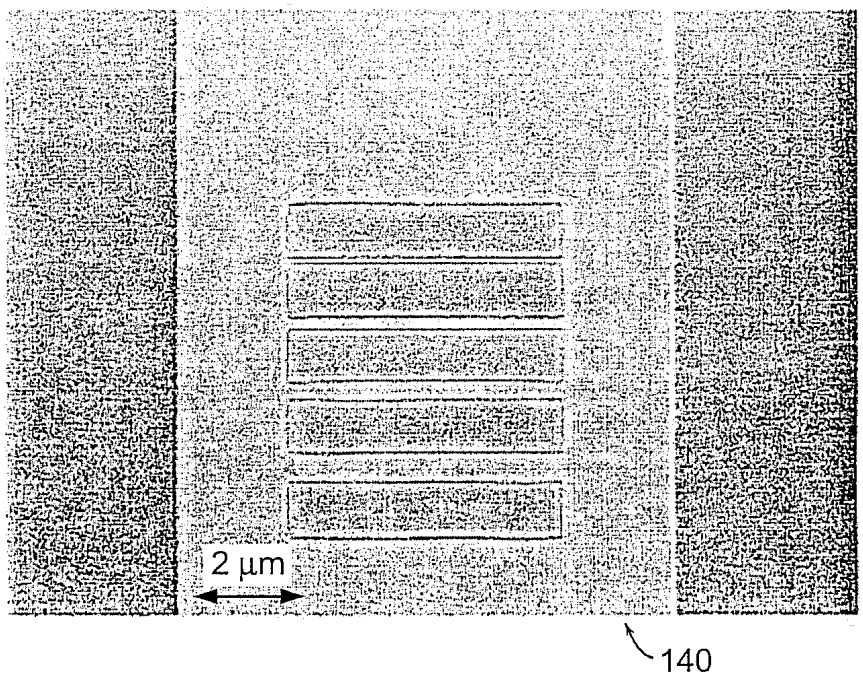

FIG. 14A

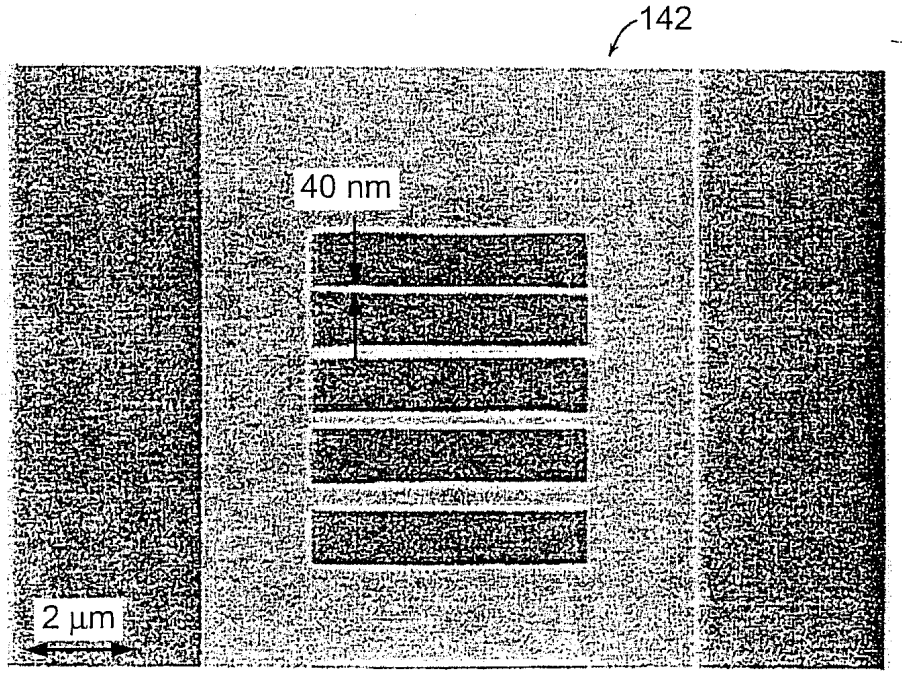

FIG. 14B

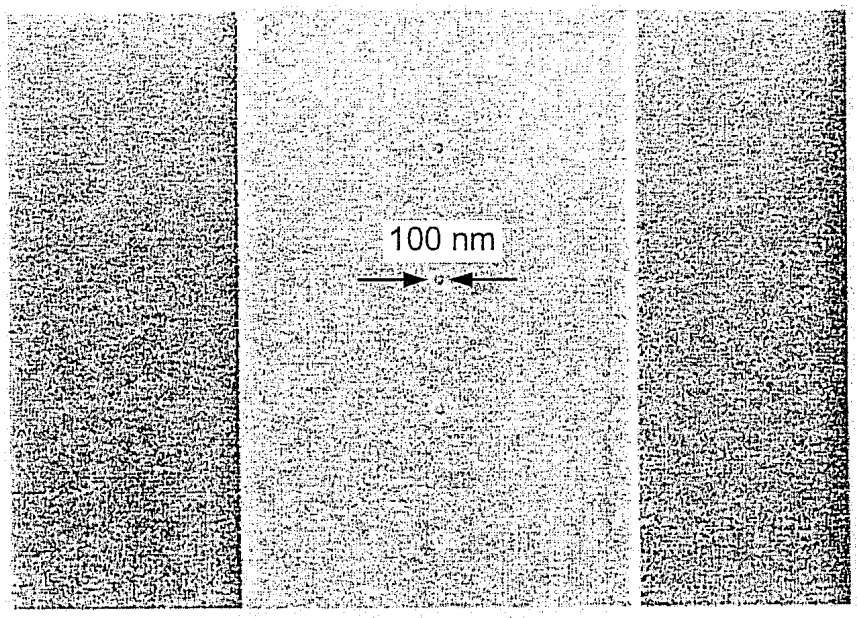

FIG. 14C

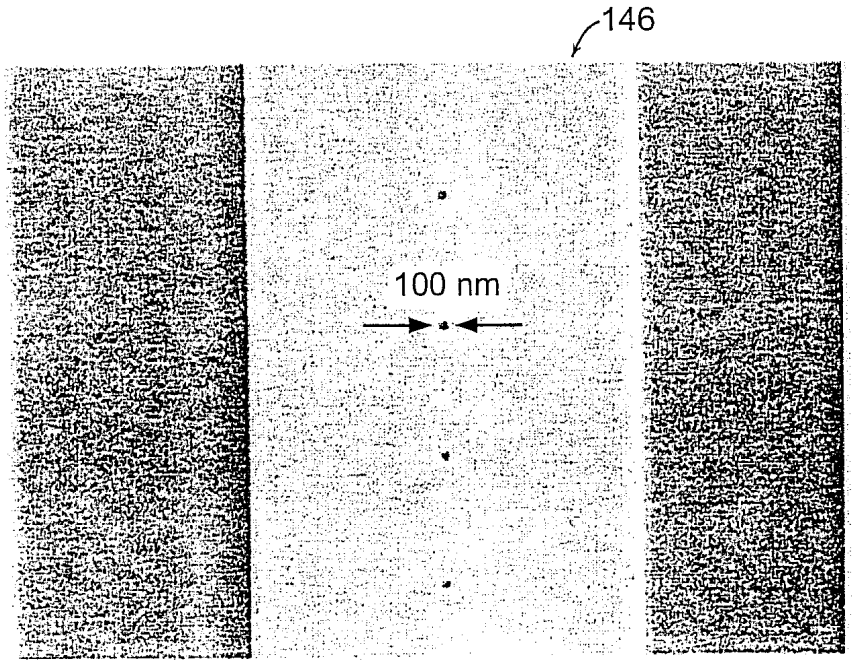

FIG. 14D

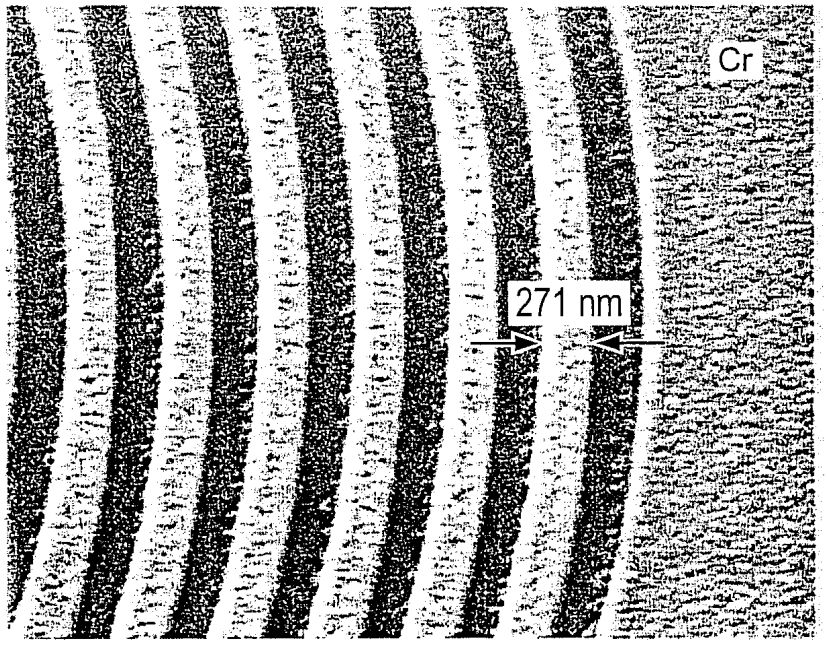

FIG. 15A

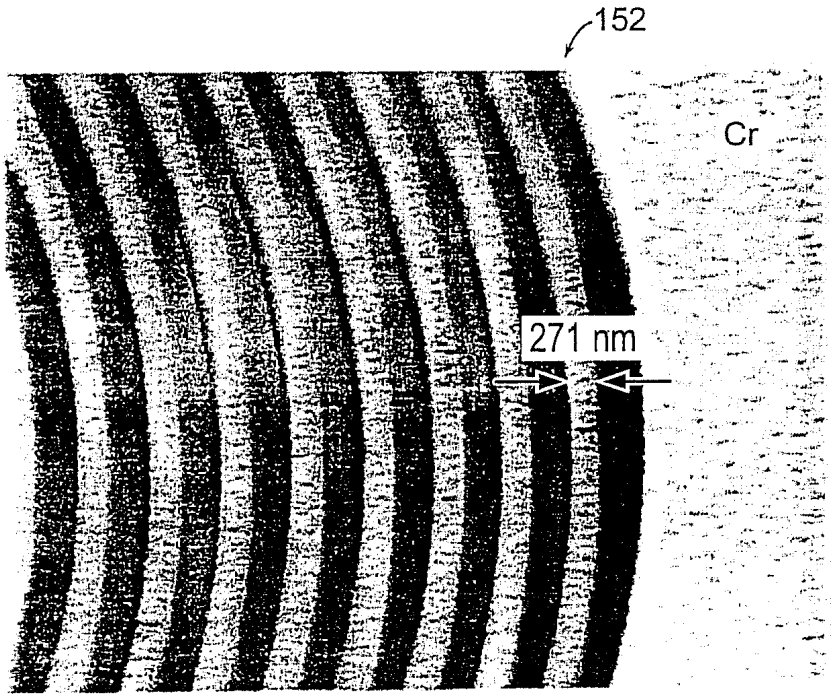

FIG. 15B